

FACT SHEET
REISSUANCE OF A GENERAL VPDES PERMIT
FOR CONCRETE PRODUCTS INDUSTRIAL CATEGORY
2013 Reissuance

The Virginia State Water Control Board has under consideration the reissuance of a general VPDES permit for point source discharges from the concrete products industrial category to surface waters.

Permit Number: VAG11

Name of Permittee: Any owner of a concrete products facility in the Commonwealth of Virginia agreeing to be regulated under the terms of this general permit.

Facility Location: Commonwealth of Virginia

Receiving Stream: Surface waters within the boundaries of the Commonwealth of Virginia, except those specifically named in Board Regulations which prohibit such discharges. Discharge to surface waters may be through a municipal separate storm sewer system.

The Virginia State Water Control Board has under consideration the reissuance of the general VPDES permit for point source discharges from the concrete products industrial category to surface waters. This permit covers the Standard Industrial Classification (SIC) Codes 3271 (Concrete Block and Brick), 3272 (Concrete Products, Except Block and Brick), and 3273 (Ready-Mixed Concrete). This permit will be effective October 1, 2013 and will expire on September 30, 2018.

All pertinent information is on file and may be inspected, and arrangements made for copying by contacting Eleanore Daub at:

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Activities Covered by this General Permit and Process Descriptions

This general permit will cover point source discharges of process wastewaters and storm water runoff associated with the operation of concrete products facilities where the primary industrial activity is classified as Standard Industrial Classification (SIC) Codes 3271, 3272 and 3273. The permit regulation was amended on February 8, 2006 to add Concrete Block and Brick (SIC Code 3271) and Concrete Products, Except Block and Brick (SIC Code 3272) to the point sources that could be covered under this permit. Previous to 2006, only Ready-Mix (SIC Code 3272) was listed. Coverage also includes temporary or portable ready-mixed plants erected on or near construction sites. This general permit does not exclude the coverage for a concrete product facility with a secondary industrial activity co-located on site as long as the secondary activity does not generate any point source discharges.

SIC 3273 - Ready-mix

Ready-mixed concrete is basically produced by two methods: dry batch mixing and central mixing. For dry batch mixing, the mix of cement and aggregate is weighed and transferred in a dry state to the truck along with a proportioned amount of water. The concrete is mixed in the truck on the way to the job. For central mixing, the concrete is prepared in a central mixer then transferred to a truck mixer or agitator for delivery.

In addition to cement, fly ash and aggregate, ready-mixed concrete typically contains admixtures and entrained air. Entrained air improves resistance to freezing and thawing. Admixtures may include calcium chloride, triethanolamine, calcium salt, lignosulfonic acid, vinsol, saponin, keratin, sulfonated hydrocarbon, fatty acid glyceride, vinyl acetate, and styrene copolymer of vinyl acetate as ingredients. These compounds may be added to obtain desired characteristics, such as slower or more rapid curing times.

Generally, there are two types of ready-mixed concrete plants: permanent (also known as stationary) and temporary which are usually portable. A permanent plant usually produces various types of concrete for numerous customers. The permanent plant may operate either as a dry batch mixing plant or central mixing plant. A large facility may even consist of both processes. Portable plants are used on large highway and airport paving jobs. These plants can operate using either dry batch mixing or central mixing. Portable plants have the

same significant materials and industrial activities as permanent facilities. Therefore, portable plants are covered under this general permit.

The wastewater discharge from ready-mixed concrete plants includes truck washout, truck wash-off, central mixer washout, storm water runoff, and noncontact cooling water from geothermal system or other such systems.

Process wastewater is generated by the cleaning of trucks and equipment that come in contact with cement and "wet" concrete. Trucks are usually washed on the outside after they are loaded with fresh concrete, before leaving the plant. They are also washed inside and out at the end of the day. Washing down of areas where this cleaning takes place also generates process wastewater. Process wastewater can also be generated from engine steam cleaning in the vehicle/equipment maintenance shop. Discharges of process wastewater may contain some storm water associated with industrial activity which has come in contact with raw material stockpiles, dried waste concrete, or vehicle parking or maintenance areas. The storm water can be contaminated at the truck loading site and at the truck washing area.

Treatment or control of process wastewater and commingled storm water usually consists of settling basins to reduce the solids content and acid addition to neutralize the high pH of the wastewater. Solids removal may be accomplished through a series of settling ponds or sloped slab separation basins. Mechanical clarification devices such as screw washers are used by some facilities to recover coarse aggregate and sand for reuse. The clarified wastewater may be completely or partially recycled and reused. When discharge is necessary, pH neutralization often is required prior to discharge. Mode of discharge can be batch or continuous.

Another source of wastewater at ready-mixed concrete plants is noncontact cooling water from a geothermal system or other such systems. This water may be from a groundwater well or potable water supply. The water is used to raise the temperature of concrete make up water in winter and lower it in summer. The temperature control system operates so that the cooling water does not come in direct contact with the concrete or the raw materials. Once the heat transfer has taken place, the water may be discharged or returned to the system for recycle. Noncontact cooling water may be commingled with process wastewater or discharged through a separate outfall. At the time of reissuance, it is believed that very few, if there is any, facilities currently employ such system to adjust the temperatures of concrete make up water.

Storm water associated with industrial activity that is not combined with process wastewater or noncontact cooling water may be discharged from ready-mixed concrete plants. This storm water may have come in contact with or been exposed to raw material (sand, gravel or stone) stockpiles, dried waste concrete, or vehicle parking or maintenance areas. Fugitive dust is prevalent on the grounds at concrete plants. Shrouds and vacuum recovery units are used to minimize dust releases at concrete mixing and truck loading locations. Cement and aggregate unloading from railroad cars, trucks or barges is another potential source of contamination for storm water. No treatment is normally employed prior to such discharge. Some facilities store the storm water in a retention pond and operate the basin in a "no-discharge" mode. The water collected in the retention pond either evaporates, infiltrates, or is used as process water on site.

SIC 3272 - Concrete Products, Except Block and Brick

Concrete Products, Except Block and Brick include concrete pipe, precast concrete products, and prestressed concrete products.

Concrete Pipe. Concrete pipe products include: culvert pipe (reinforced and non-reinforced), storm sewer pipe (reinforced and non-reinforced), sanitary sewer pipe (reinforced and non-reinforced), pressure pipe (reinforced, prestressed, pretensioned and other pressure pipe), irrigation pipe and drain (tile), and other concrete pipe (e.g., manholes and conduits).

Concrete pipe is generally produced by three methods: (1) the vertical packerhead (tamping) method; (2) the vertical cast method; and (3) the spin casting production method. The vertical packerhead method uses a machine called a packerhead to compact and vibrate a moist concrete mix into a steel form. The method is used to produce pipe up to five feet in diameter. The vertical cast method is used to produce reinforced pipe. Due to labor cost and time, this method is generally limited to production of reinforced pipe over five feet in diameter. A wet concrete mix from a central mixer is transported by buckets and poured into a vertical steel form containing a reinforcing cage. The steel forms are stripped from the pipe after the concrete sets. The spin casting production method is used to produce reinforced pipe up to four feet in diameter. The form containing a reinforcing cage is placed horizontally and rotated at a high rate, while concrete is added by a reciprocating nozzle. The spinning action densifies the concrete on the inside of the form and dewateres it. The inner surface of the pipe is finished by a mechanical roller. Reinforced concrete pressure pipe, produced by spin casting, uses a hydraulically tested sheet steel cylinder form that remains as part of the finished pipe.

All concrete pipe is cured at ambient conditions or spray cured, until it reaches a certain green strength, at which time it is cured by low pressure steam either in a kiln or in a chamber constructed around the pipe. For pipe produced by the packerhead method, the forms are usually removed before steam curing, while for the vertical cast and spin casting methods the forms usually remain on the pipe during curing. In all cases except reinforced concrete pressure pipe, a form release oil is used. In the production of reinforced concrete pressure pipe additional processes include: hydraulic testing of the cylinder, wrapping the cured pipe with high strength steel wire, and coating the steel wire wrap with concrete grout. There is no waste water from atmospheric curing. Waste water from steam curing and spray curing contains suspended solids, oil and grease and has a high pH.

Precast Concrete Products. Precast concrete products include: roof and floor units (slabs and tile; joints and beams); architectural wall panels; pilings, posts and poles; cast stone (products for architectural purposes); prefabricated building systems; other precast construction prod.; burial vaults and boxes; silo staves; septic tanks; dry-mixed concrete materials (e.g., Sakrete); other precast (e.g., laundry tubs).

Simple precast concrete products are produced by pouring the concrete from a mixer into steel forms, and allowing the product to cure, either at ambient conditions, with low pressure steam, or with a water spray. Curing takes place in two steps, first with the form on then off. The second curing step usually takes place at ambient conditions. Reinforced concrete products contain steel structural members to provide increased strength.

Precast architectural wall panels are generally finished to produce a decorative surface of exposed aggregate. For the most common production method, a retarder is spread in the form bottom, reinforcing steel is placed in the form, and the concrete mix is cast. When the concrete has set and the form is removed, the surface is washed with a weak acid solution, sandblasted, or washed with high pressure water to clean away the unset surface cement and expose the coarse aggregate. The panel is then cured completely in a storage yard.

Prestressed Concrete Products. Prestressed concrete products are chiefly used as structural and architectural components and include: single tees, double tees, and channels; piling, bearing piles, and sheet piles; bridge beams; solid and hollow cored slabs and panels; other prestressed products (e.g., arches); joist, girders, and beams (other than bridge beams).

Prestressed concrete products are produced in similar fashion as precast reinforced concrete products with the substitution of steel cables under tension instead of steel rods for reinforcement. Prestressed concrete products may be either pretensioned or post-tensioned.

The wastewater discharge from Concrete Products, Except Block and Brick facilities includes transport bucket and central mixer washout, form wash-off, condensate from steam curing, spray curing wastewater, surface finishing water, spin cast wash-water, pre-wetting of imbedded pressure pipe, storm water, boiler blowdown, noncontact cooling water from bearings and compressors, and miscellaneous equipment wash-off. Pollutants in the wastewater discharge include suspended solids, oil and grease, high pH, and COD.

SIC 3271 - Concrete Block and Brick

Concrete block and brick are classified into the following products: structural block produced with lightweight aggregate such as cinder, expanded shale, pumice or other materials; structural block produced with heavyweight aggregate such as sand, gravel, crushed stone or other materials; decorative block - such as screen block, split block, slump block and shadowal block; and concrete brick.

The manufacturing process for concrete block and brick consists of mixing, forming, and curing. Typically, the aggregate, cement and water are weighed and mixed in batches of about four cubic yards in a rotary mixer. The concrete mix used for production of block and brick contains less water than ready-mixed concrete. The type of aggregate being used will determine if a lightweight or heavyweight product is produced. Color may be added to the mix to produce decorative block. The mixed concrete is fed into an automatic block molding machine, where the moist mix is rammed, pressed or vibrated into the desired shape. Following forming, the material is stacked onto iron framework cars and allowed to cure. To produce a structural high-strength block within a reasonable time period, the block must be cured under moist conditions. The three basic methods of curing are: (1) atmospheric; (2) low pressure steam; and (3) autoclave or high pressure steam.

Atmospheric curing produces a lower strength block than the other two methods of curing. Atmospheric curing uses ambient heat and humidity, and heat of hydration to cure the block, and also includes curing within enclosures at ambient conditions. Curing usually takes place for about four hours. There are no additional wastewaters produced from this curing process.

In the low pressure steam method, the loaded curing cars are placed into a chamber or kiln where low pressure steam less than 150 psi is injected from perforated pipes for approximately 8-10 hours, depending on mix conditions, user specifications, and ambient temperature. Waste water from this curing method consists

primarily of steam condensate, which contains some suspended solids, dissolved solids, COD, oil and grease and a high pH. The low pressure steam is generated by a boiler which requires periodic blowdown.

The autoclave or high pressure steam curing method produces a higher strength block with less shrinkage in less time than the low pressure steam curing method. For this method the curing cars are loaded in a large horizontal, cylindrically shaped autoclave where high pressure steam (greater than 150 psi) is injected or convected. After a curing cycle of about 8 hours the steam is released to the atmosphere and the blocks are removed and stored. An alternative method of steam production uses a hot oil convection method, where water is placed in a trough within the autoclave and hot oil heats the water into steam. Following curing, the autoclave is allowed to cool and a portion of the steam condenses back into the trough. Periodically the trough water is discharged because the alkalinity, due to the pickup of calcium oxide, makes the water corrosive to the steel racks of the curing cars. Wastewater discharges from the autoclave curing process can include boiler blowdown, autoclave blowdown condensate, and autoclave purge. Pollutants include suspended solids, COD, oil and grease, and high pH, resulting from autoclave blowdown condensate and in the convection process, autoclave purge.

The primary source of wastewater from concrete block and brick facilities is equipment wash-off, including: delivery trucks, conveyor belts, transport buckets, central mixers and forms. Generally only suspended solids are a problem in this wastewater and can be handled with simple settling. Other potential sources of wastewater include: accidental spill wash-down, storm water runoff, and noncontact cooling of bearings and compressors. Spill wash-down and storm water runoff can be handled with other wash-waters. The noncontact cooling water (and other clean wastewater) can be used for mixing water makeup, aggregate moisture control, and yard dust control.

General Permit Coverage and Registration

The general permit will have a fixed term of 5 years. Every authorization under this general permit will expire at the same time (September 30, 2018). All existing permittees will receive renewed coverage on the same date (October 1, 2013), provided a complete registration statement has been filed prior to the general permit's expiration date. Any new permittees seeking coverage after October 1, 2013 will receive coverage generally within 30 days of submitting a registration statement and their coverage will also expire on September 30, 2018. Note that the registration asks the question if a storm water pollution prevention plan (SWPPP) has been prepared. The registration statement instructs the new applicants to have a SWPPP before commencement of operations and existing permittees to update and implement revisions to the SWPPP no later than January 1, 2014. Coverage should not be denied if the answer to the question is 'no'. The registration also asks for representative outfall information to be submitted with the registration rather than with each DMR, as it was for the last permit cycle. One of the questions to support representative outfalls asks for monitoring data, if available. The permittee is not required to collect new data if there is none available at the time of registration. Also note new with the 2013 reissuance that portable concrete plants must submit a closure plan with the registration in order to be approved for coverage. The items needed in a closure plan include treatment, removal and final disposition of residual wastewater, contaminated storm water held at the facility and solids, fate of structures, a removal plan for all exposed industrial materials and description of the stabilization of land in which they were stored or placed.

All persons desiring to be covered by this general permit must register with the Department by filing a registration statement and applicable fees. The registration statement shall be submitted and a notification of coverage issued prior to any discharges or other activities for which this permit is required.

Concrete products facilities that are discharging process wastewater and/or storm water associated with industrial activity to surface waters on the effective date of this general permit and which have not been issued an individual VPDES permit, are required to submit the registration statement on or before July 1, 2013. Existing operations with individual VPDES permits that wish to seek coverage under the proposed general permit would have to file a registration statement at least 210 days prior to the expiration date of the individual VPDES permit. This gives staff some time to decide whether they can have coverage, and if not, the permittee can still meet the 180 day before expiration VPDES application requirement. For all new concrete products facilities that will have discharges of process wastewater or storm water associated with industrial activity and that will begin activities after the effective date of this permit, the registration statement shall be filed at least 30 days prior to the commencement of operation of the concrete plant.

This general permit does not cover activities or discharges covered by an individual VPDES permit until the individual permit has expired or has been revoked. Any person conducting an activity covered by an individual permit, which could be covered by this general permit, may request that the individual permit be revoked and register for coverage under this general permit. Antibalancing will be considered prior to granting the coverage under this general permit. Any owner or operator not wishing to be covered or limited by this general permit may make application for an individual VPDES permit, in accordance with VPDES procedures, stating the reasons supporting the request. This

general permit will not apply to any new or increased discharge that will result in significant effects to the receiving waters. The determination is made in accordance with the State Water Control Board's Antidegradation Policy contained in the Virginia Water Quality Standards, 9VAC25-260-30.

All facilities that the Department believes are eligible for coverage under this general permit will be authorized to discharge under the terms and conditions of the permit after a complete registration statement is submitted, the applicable permit fee is paid and the Department sends a copy of the general permit to the applicant. If this general permit is inappropriate, the applicant will be so notified and the requirement that an individual permit or alternate general permit is needed will remain in effect.

Part I A - Effluent Limitations, Monitoring Requirements and Their Basis

The parameters to be limited in process wastewater discharges are pH, total suspended solids, total petroleum hydrocarbons (TPH), total residual chlorine (TRC) and temperature. These parameters were chosen based on the evaluation of 1992-1996 DMR data for the issuance of the first general 'ready-mix' permit in 1998. TPH, heat, chlorine and ammonia are also pollutants of concern when vehicle or equipment degreasing wastewater or noncontact cooling water are commingled with the process wastewater prior to discharge. Specific rationale for all parameters and when they apply is discussed below.

1. Discharge of process wastewater which may contain input from the vehicle/equipment maintenance activities, and may be commingled with noncontact cooling water or storm water runoff:

<u>Parameter</u>	<u>Limitation</u>	<u>Frequency⁽⁶⁾</u>
Flow	No limit, estimate and report average and maximum values	
Total Suspended Solids	30 mg/l avg, 60 mg/l max.	
pH	6.0 minimum, 9.0 maximum ⁽¹⁾	
Total Petroleum Hydrocarbons ⁽²⁾	15 mg/l maximum	
Total Residual Chlorine ⁽³⁾	0.016 mg/l, avg. and max.	
Ammonia-N ⁽³⁾	No limit, report maximum value	
Temperature ⁽⁴⁾	Maximum ⁽⁵⁾	

(1) Where the Water Quality Standards (9 VAC 25-260) establish alternate standards for pH in the waters receiving the discharge, those standards shall be the maximum and minimum effluent limitations.

(2) Total Petroleum Hydrocarbons limitation and monitoring are only required where a discharge contains process wastewater generated from the vehicle or equipment degreasing activities. Total Petroleum Hydrocarbons shall be analyzed using the EPA SW-846 Methods 8015B (1996), 8015C (2000 or 2007), 8015D (2003) for diesel range organics or 40 CFR 136 methods.

(3) Chlorine limitation, and chlorine and ammonia monitoring are only required where a discharge includes cooling water that is chlorinated or contains chloramines. Ammonia monitoring applies only where the source of cooling water is disinfected using chloramines.

(4) Temperature limitation and monitoring are only required where a discharge contains cooling water.

(5) The effluent temperature shall not exceed a maximum 32 °C for discharges to non-tidal coastal and piedmont waters, 31 °C for mountain and upper piedmont waters, 21 °C for put and take trout waters, or 20 °C for natural trout waters. No maximum temperature limit applies to discharges to estuarine waters.

For estuarine waters, non-tidal coastal and piedmont waters, mountain and upper piedmont waters, and put and take trout waters, the effluent shall not cause an increase in temperature of the receiving stream of more than 3°C above the natural water temperature. For natural trout waters, the temperature of the effluent shall not cause an increase of 1 °C above natural water temperature. The effluent shall not cause the temperature in the receiving stream to change more than 2 °C per hour, except in the case of natural trout waters where the hourly temperature change shall not exceed 0.5 °C.

Natural temperature is defined as that temperature of a body of water (measured as the arithmetic average over one hour) due solely to natural conditions without the influence of any point-source discharge.

(6) The 2008 general permit allowed for reduced monitoring from 1/month to 1/3 months when compliance was demonstrated. This was eliminated with the 2013 reissuance and all permittees were given 1/3 months monitoring. Monitoring requirements are reduced from monthly to quarterly based on public and staff comment. The agency agrees with the public comment received that "no discharge" situations should be awarded a chance at reduced monitoring. Staff review of monitoring data associated with the existing general permit showed that monthly

reporting from any facility is not necessary. Also note the TPH limits are only to be placed in the permit when vehicle degreasing occurs on site. Vehicle degreasing or equipment degreasing has been clearly defined to mean the washing or steam cleaning of engines or other drive components of a vehicle or equipment in which the purpose is to degrease and clean petroleum products. It does not mean washing sediment or concrete off trucks.

Note that a QL of 5.0 mg/L has been added for TPH. The QL is consistent with the VPDES individual and general permit program QLs.

All samples are collected by grab, except for temperature, by immersion/stabilization.

TSS

Although there are no water quality standards or federal effluent guidelines for total suspended solids for the industrial category covered by the general permit, the Department has decided that such limits are necessary for the protection of the receiving waters. The total suspended solids limitations are established at levels which, based on the Department's experience with individual VPDES permits, are achievable with conventional treatment technology and which will prevent the build-up of solids on the bottoms of receiving waters. Note that a QL of 1.0 mg/L has been added for TSS. The QL is consistent with the VPDES individual and general permit program QLs.

pH

The pH limitation is based upon Virginia's Water Quality Standards (9 VAC 25-260). Because the facility may discharge into the receiving water at zero low flow conditions, the limitation of the water quality standard on the effluent is appropriate.

TPH

Due to the concern that process wastewater generated from engine steam cleaning during vehicle or equipment degreasing will carry petroleum-based pollutants (diesel range organics), this general permit proposes a TPH limitation of 15 mg/l for a discharge with such input. The TPH maximum limitation is based on the ability of simple oil/water separator equipment. Historically, oil and grease (O&G) limits have been placed in the VPDES permits for many facilities that handle petroleum products or where contamination by petroleum products is of concern. The O&G limits now are expressed as Total Petroleum Hydrocarbons (TPH) instead since there is little reason to expect fatty matter from plant and animal sources. Based on the recommendation provided by Guidance Memo # 96-002, a one to one ratio between O&G and TPH is assumed. The TPH testing protocols were updated during the 2003 general permit issuance, in 2008 and 2013.

TRC

The general permit contains a TRC limit in order to ensure that the Virginia Water Quality Standards (9VAC25-260-140) are maintained in the receiving waters regardless of the dilution available to the discharge. The TRC limit is derived in accordance with Guidance Memo #00-2011 Guidance on Preparing VPDES Permit Limits (dated August 24, 2000) and the chlorine limit was revised in 2003 using this guidance. Implementation of the toxic standards including chlorine was updated through this guidance as a result of modifications to the Virginia Water Quality Standards (9VAC25-260) made at that time. A printout of the STATS program output is attached. TRC limitation and monitoring requirements are applicable where the source of cooling water is chlorinated.

Ammonia

The permit contains monitoring requirements for ammonia. Chloramines are common chemicals used for disinfection of drinking water. Ammonia is a by-product of chloramines use. Therefore, ammonia monitoring is required in cases where a discharge contains cooling water that is disinfected using chloramines as identified in the registration statement Item 2.G.a. The purpose is to collect data to evaluate whether the general permit is appropriate for such discharges and/or whether ammonia limits may be required in such discharges for the next reissuance of the general permit. This is consistent with the General VPDES Permit for Cooling Water Discharge (9VAC25-196).

All limits should be considered as two significant digits for compliance purposes as per special condition Part I.B.15. b.(4) and in accordance with Guidance Memo No. 06-2016 Significant Figures for Discharge Monitoring Reports.

2. Discharge of noncontact cooling water:

<u>Parameter</u>	<u>Limitation</u>
Flow	No limit, estimate and report average and maximum values
pH	6.0 minimum, 9.0 maximum ⁽¹⁾
Total Residual Chlorine ⁽²⁾	0.016 mg/l avg. and max.

Ammonia-N ⁽²⁾	No limit, report maximum value
Temperature	Maximum ⁽³⁾

(1) Where the Water Quality Standards (9 VAC 25-260) establish alternate standards for pH in the waters receiving the discharge, those standards shall be the maximum and minimum effluent limitations.

(2) Chlorine limitation and monitoring are only required where the source of cooling water is chlorinated. Ammonia monitoring applies only where the source of cooling water is disinfected using chloramines.

(3) The effluent temperature shall not exceed a maximum 32 °C for discharges to non-tidal coastal and piedmont waters, 31 °C for mountain and upper piedmont waters, 21 °C for put and take trout waters, or 20 °C for natural trout waters. No maximum temperature limit applies to discharges to estuarine waters.

For estuarine waters, non-tidal coastal and piedmont waters, mountain and upper piedmont waters, and put and take trout waters, the effluent shall not cause an increase in temperature of the receiving stream of more than 3°C above the natural water temperature. For natural trout waters, the temperature of the effluent shall not cause an increase of 1 °C above natural water temperature. The effluent shall not cause the temperature in the receiving stream to change more than 2 °C per hour, except in the case of natural trout waters where the hourly temperature change shall not exceed 0.5 °C.

Natural temperature is defined as that temperature of a body of water (measured as the arithmetic average over one hour) due solely to natural conditions without the influence of any point-source discharge.

(4) The 2008 general permit allowed for reduced monitoring from 1/month to 1/3 months when compliance was demonstrated. This was eliminated with the 2013 reissuance and all permittees were given 1/3 months monitoring. Monitoring requirements are reduced from monthly to quarterly based on public and staff comment. The agency agrees with the public comment received that "no discharge" situations should be awarded a chance at reduced monitoring. Staff review of monitoring data associated with the existing general permit showed that monthly reporting from any facility is not necessary.

All samples are collected by grab, except for temperature, by immersion/stabilization.

pH

The pH limitation is based upon Virginia's Water Quality Standards (9 VAC 25-260). Because the facility may discharge into the receiving water at zero low flow conditions, the limitation of the water quality standard on the effluent is appropriate.

TRC and Ammonia

The general permit contains a TRC limit in order to ensure that the Virginia Water Quality Standards (9VAC25-260-140) are maintained in the receiving waters regardless of the dilution available to the discharge. The TRC limit is derived in accordance with Guidance Memo #00-2011 Guidance on Preparing VPDES Permit Limits (Dated August 24, 2000). A printout of the STATS program output is attached. TRC limitation and monitoring requirements are applicable where the source of cooling water is chlorinated. Ammonia monitoring is only required in cases where cooling water is disinfected using chloramines.

The primary pollutant associated with noncontact cooling water discharges is the heat taken up by the water. The general permit will limit temperature in these discharges so that the receiving waters will not exceed the maximum temperature established in the Water Quality Standards (9VAC25-260-50). The general permit also limits temperature in these discharges so that the rise above natural temperature and the maximum hourly temperature change in the receiving waters will not violate the Water Quality Standards (9VAC25-260-60, 70 and 80).

All limits should be considered as two significant digits for compliance purposes as per special condition Part I.B.15.b.(4) and in accordance with Guidance Memo No. 06-2016 Significant Figures for Discharge Monitoring Reports.

3. Discharge of storm water which does not combine with other process wastewaters or noncontact cooling water:

<u>Parameter</u>	<u>Benchmark Monitoring</u>
Flow	No limit, estimate volume (MG) discharged during entire monitored storm event
Total Suspended Solids	100 mg/l
Total pH	6.0 – 9.0 standard units

In 2013 the monitoring (NL) requirements were replaced with 'benchmark monitoring. The permit states that should the benchmark monitoring for TSS exceed 100 mg/l maximum or the pH fall outside of the range of 6.0-9.0 standard units, the permittee shall evaluate the overall effectiveness of the SWPPP in controlling the discharge of pollutants to receiving waters. Benchmark concentration values are not effluent limitations. Exceedance of a benchmark concentration does not constitute a violation of this permit and does not indicate that violation of a water quality standard has occurred; however, it does signal that modifications to the SWPPP are necessary, unless justification is provided in the routine facility inspection or comprehensive site compliance evaluation (Part II G 6 and Part II G 8). The SWPPP does not have to be modified if justification is provided. For example, if all appropriate BMPs are in place and maintained correctly, that would be sufficient justification to indicate that the exceedance was an anomaly and additional modification of the SWPP is unnecessary.

Monitoring is required once per calendar year by grab sample, collected during the first thirty minutes of the discharge. If during the first thirty minutes it was impracticable, then a grab sample shall be taken during the first hour of discharge.

Guidance on the conduct of storm water sampling is provided by the EPA in the document titled NPDES Storm Water Sampling Guidance Document, publication number EPA 833-B-92-001, July 1992.

Samples taken in compliance with the monitoring requirements specified in Part II A (Storm Water Management) shall be taken at the outfall location(s) identified in the approved registration statement. In the cases where discharges to surface waters are through the municipal separate storm sewer systems, samples should be taken at the point where the discharge enters the municipal separate storm sewer system.

The monitoring requirements for storm water are consistent with the monitoring requirements of the original storm water general permits (1994) which were based on EPA's Baseline Industrial Activity Storm Water General Permit (1992). Historically, oil and grease (O&G) limits have been placed in the VPDES permits for many facilities that handle petroleum products or where contamination by petroleum products is of concern. The O&G monitoring requirement from 1998 - 2008 was expressed as Total Petroleum Hydrocarbons (TPH) instead of O&G since there is little reason to expect fatty matter from plant and animal sources. Based on the recommendation provided by Guidance Memo # 96-002, a one to one ratio between O&G and TPH was assumed. In 2013, the TPH limit was removed from storm water monitoring. Total petroleum hydrocarbons are not suggested for monitoring in this type of industrial storm water by the EPA per the Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP), 2008. Also, levels consistently have remained undetectable or very low over the years.

In 2003, in order to maintain consistency with the EPA NPDES Storm Water Multi-Sector General Permit, total recoverable iron was added and chemical oxygen demand deleted from the parameter list for storm water discharges. In 2013, the total recoverable iron limit was removed from storm water monitoring primarily because iron is naturally high in soils in Virginia and expected to be high in storm water. Also, there is no feasible alternative to remove iron in storm water when it is naturally occurring (except to the amount the existing technology removes solids and solids are limited under the permit). DEQ has collected iron data from storm water since 1998 and has no reason to continue to monitor. The DEQ does not think that total iron is an appropriate benchmark for Virginia. Other surrounding states (Maryland and North Carolina) do not use iron as a benchmark. TSS is a more appropriate benchmark to determine SWPPP success.

Quarterly visual monitoring was added in 2003. The deadline for annual monitoring report was also changed in 2003 to the tenth day of January of each year. Specific storm event data is required to be submitted with the DMR or on the DMR.

All limits should be considered as two significant digits for compliance purposes as per special condition Part I B 16 b (4) and in accordance with Guidance Memo No. 06-2016 Significant Figures for Discharge Monitoring Reports.

Part I B - Special Conditions

1. Restriction of floating solids, visible foam, solids deposition or oil sheen

This condition is required to implement the Water Quality Standards (9VAC25-260-20).

Restriction of solids deposition in surface water in the vicinity of the outfall as a result of the industrial activity. This requirement is due to concerns from staff of concrete and raw product residue entering the stream at some operations. Improved housekeeping on site should maintain this requirement. Restriction of oil sheen was added in 2013 in response to staff concerns that petroleum products are on the site but should not appear in the stream. Accidental spills of petroleum products are cleaned up immediately so as not to enter surface waters as per special condition #3. If vehicle degreasing is occurring on the site then those process water discharges have

total petroleum hydrocarbon limits. This addition is just an added measure of protection and something the inspector can look for to ensure proper BMPs, clean up measures or treatment is occurring.

2. Materials handling/storage

Raw materials and products are to be stored and handled so that any untreated discharge of pollutants to surface waters is prevented.

3. Vehicles and equipment maintenance

Vehicles and equipment used in the industrial activity are to be operated and maintained in a manner that prevents pollution of surface or ground waters. This special condition addresses best management practices for activities associated with vehicle maintenance that take place at a typical concrete products facility.

4. Restrictions of washing activities

All washdown and washout of trucks, mixers, transport buckets, forms or other equipment is restricted to the designated washdown and washout areas. Wastewater generated in this area is to be recycled or collected and treated to meet the limits in Part I A prior to discharge. The storage of raw materials and washing of trucks and other equipment are necessary aspects of concrete products facilities. These activities are allowed by the general permit as long as they are handled in a way that provides for treatment of any wastewater prior to discharge. This special condition is consistent with EPA's "concrete products facilities" requirement in their Industrial Storm Water General Permit and applies to all equipment that is washed out of product (not just trucks).

5. Restrictions of waste concrete reclamation

Waste concrete that returns to the plant is either reclaimed at the truck washing facility or it is dumped on the plant site for drying and later reclamation for off-site fill or road base. The general permit restricts this practice to a designated area and prohibits any untreated discharge from it to surface waters. Until this concrete is dry, this wet waste concrete should be in a designated area that drains to the settling basins, the wet concrete is completely contained and cannot reach the receiving stream (even during normal (not 25 year-24 hour storm event) rain events) or the facility operates in a 'no-discharge' mode (see special condition 11 below).

6. Recycle and Reuse

Wastewater should be reused or recycled whenever feasible. This is not a requirement and is a general suggestion seen in other general permits. The industry frequently reuses settled wastewater for dust suppression.

7. Prohibition of sewage discharge

The discharge of sewage is not permitted under the general permit. The limits of the permit do not address pollutants of concern in sewage.

8. Prohibition of unapproved chemical usage and prior approval requirement for change of chemical usage for noncontact cooling water

In order to assure protection of water quality and beneficial uses of the waters receiving the discharge, the use of any chemical additives in noncontact cooling water, except chlorine, without prior approval is prohibited under this general permit. The general permit contains a water quality-based chlorine limitation.

The chemical treatment that is employed in the geothermal or other system will be identified on the registration statement and evaluated before the facility is covered under the general permit. Prior approval shall be obtained from the DEQ before any changes are made to the chemical usage in the geothermal or other system, during the life of the permit term. Requests for approval must include: the chemical additive to be employed and its purpose; the proposed schedule and quantity of chemical usage, and the estimated concentration in the discharge; the wastewater treatment or retention (if any) to be provided during the use of the additive; and a Safety Data Sheet (SDS - formerly MSDS in 2008 permit) and any of the manufacturer's aquatic toxicity information for each additive proposed for use.

9. Operation and maintenance manual requirement

The permittee is required to develop and implement an Operation and Maintenance Manual which includes procedures and practices for the mitigation of pollutant discharges and for the protection of state waters from the facility's operations. This will document procedures for plant personnel so that the other special conditions can be met. It specifies operations and maintenance practices for wastewater treatment process units and chemical and material storage areas, methods for estimating flow, solids management and disposal procedures, temporary and long-term facility closure plans, testing requirements and procedures, recordkeeping and reporting requirements and duties and roles of responsible officials. Facilities shall develop or review and update, as appropriate the O&M

manual within 180 days of coverage and review annually thereafter. In 2013, the O&M special condition was reformatted, review periods made annual and specific items required for closure plans were added. These specific items include (i) treatment, removal, and final disposition of residual wastewater, contaminated storm water held at the facility, and solids; (ii) fate of structures; (iii) a removal plan for all exposed industrial materials; and (iv) description of the stabilization of land in which they were stored or placed.

10. Notification of municipal separate storm sewer system

If the facility discharges through a municipal separate storm sewer system (MS4) to surface waters, the permittee must notify the owner of the storm sewer of the presence of the discharge and provide a copy of such notice to DEQ.

11. Freeboard requirement

The purpose of this special condition is to prevent overflow. A minimum freeboard of one foot for the treatment/storage system is required to be maintained except during a 72-hour transition period after a measurable rainfall event. The transition period will provide sufficient flexibility for proper operation and maintenance of the facility. During the transition period, no discharge from the basins and lagoons shall occur unless it is in accordance with this permit. Within 72 hours after a measurable rainfall event, the freeboard must return to the minimum freeboard of one foot. Where basins are operated in a series mode of operation, the one foot freeboard requirement for the upper basins may be waived provided the final basin will maintain the freeboard requirements of this special condition. This reflects existing practice and design of these basins. It is deemed reasonable and protective since the additional treatment provided by series basins is preferred. A daily inspection requirement is added to ensure that freeboard is properly maintained. The inspection log is required to be kept onsite and be made available to DEQ upon request.

12. Requirement for "no discharge" mode operation

In the cases where either the process wastewater which may be commingled with noncontact cooling water or storm water runoff, or the storm water associated with industrial activity are retained in a treatment/storage system which operates in a "no-discharge" mode, this general permit prohibits any discharge of pollutants to surface waters from such system except in the case of a storm event which is greater than a 25 year-24 hour storm event. This special condition only applies to those operations which the permittee had designated as "no-discharge" in the accepted registration statement.

13. Notification levels

The permittee is required to report the discharge of any toxic pollutant from any activity that has occurred or will occur when that discharge, either on routine or non-routine basis, will exceed the highest of the listed notification levels. This condition is required by the VPDES Permit Regulation (9VAC25-31-200 A).

14. Liner requirements for the settling basins

In order to comply with the statutory mandate (State Water Control Law §62.1-44.15:5.2), House Bill 972 passed by the 1998 Session of the General Assembly and effective July 1, 1998, all settling basins, used for treatment and control of process wastewater and commingled storm water that were constructed on or after February 2, 1998, are required to be lined with concrete or any other impermeable materials prior to commencing operation. The law also states that the general permit may include a requirement that settling basins built before February 2, 1998 may include the same requirement. In 2013, a requirement was added that regardless of the date of construction, all settling basins used for treatment and control of process wastewater or process wastewater commingled with storm water that are expanded or dewatered for major structural repairs shall be lined with concrete or any other impermeable materials. Major structural repairs include, e.g., construction activities that disturb the bottom or sides of the basin.

Concrete is the liner material of choice (as opposed to clay, for example) because settling basins are routinely shoveled out with heavy equipment. This requirement is not intended for basins constructed as best management practices for stormwater.

15. Reuse of treated (settled) wastewater for dust control or spraying stockpiles

Reuse of settled wastewater for dust suppression or spraying stockpiles to prepare the material for making concrete is a common practice for most of the concrete products facilities. This condition is to ensure that reuse of treated wastewater on site for these purposes is managed properly so that none of the water enters surface waters without being treated first. The reused wastewater does not need pH adjustment before reuse (but it does before discharge to surface waters). Much of the reused wastewater is adsorbed and evaporated but some may enter the treatment system;

16. Compliance reporting

In accordance with Guidance Memo#00-2001, Amendment #3 and Guidance Memo 06-2016 (Significant Figures for Discharge Monitoring Reports), this special condition identifies the quantification levels for TPH, TSS, TRC and ammonia using two significant digits, and prescribes data handling protocols for the purposes of compliance reporting. In accordance with Guidance Memo 06-2016, the condition ensures that the permittee reports discharge monitoring at two significant digits. The QLs for TPH and TSS were added in 2013.

17. TMDL Requirements

EPA does not want DEQ to authorize general permits that are not in conformance with any applicable TMDL. This was a requirement added to the regulation in section 50 'Authorization to Discharge.' Staff thought it important to repeat as a special condition in the permit itself as follows:

"Owners of facilities that are a source of the specified pollutant of concern to waters where an approved TMDL has been established shall implement measures and controls that are consistent with the assumptions and requirements of the TMDL." It reinforces the way general permits are currently handled in TMDLs. The assumption of the TMDL is that general permits are insignificant to the total load until such time that the TMDL program determines that the load is significant and the TMDL needs to be modified to include the load.

18. Adding and deleting outfalls

In 2013 a new special condition was added that allows for adding or deleting outfalls. The permittee must update the O&M manual and the SWPPP, and notify the Department within 30 days of the change. This happens occasionally and staff wanted a clear way to do this in the permit. The DEQ 2009 industrial storm water general permit has similar language.

19. Terminations

In 2013, a new special condition was added that describes how terminations of a general permit will be implemented. Permittees need to know this is an option available to them and to DEQ. This is being added to all general permits as they are reissued.

20. Temporary facility closures

In 2013, a new special condition was added that describes how temporary facility closures at inactive and unstaffed sites will be implemented. Temporary closures are more common now and since the details of what constitutes a closure plan was added to the O&M manual special condition, this special condition was added to detail how the permittee activates the closure and how to reactivate the site if needed.

21. Water Quality Standards

In 2013, a general requirement was added *"The discharges authorized by this permit shall be controlled as necessary to meet applicable water quality standards."* This matches similar language going into other general permits.

22. Responsibility To Comply With Other Laws

In 2013, a special condition was added *"Approval for coverage under this general permit does not relieve any owner of the responsibility to comply with any other federal, state or local statute, ordinance or regulation."* This requirement is part of the regulation at section 50 C and staff thought it should be repeated in the permit to remind the permittee of the responsibility.

Part II Storm Water Management

Part II was reviewed for consistency with the 2009 General VPDES Permit for Discharges of Storm Water Associated with Industrial Activity and the 2008 EPA NPDES Storm Water Multi-Sector General Permit. The sector specific storm water pollution prevention plan requirements were originally included in 2000. Many of the sections have been completely revised to match language in the 2009 ISWGP. The permit should be consulted for exact details of each section in Part II. Herein is a summary:

Part II A Monitoring

In 2013, this entire section was revised to match (for the most part) language in the 2009 Industrial Storm Water General Permit. Some differences can be found but these were done with TAC consensus. However, the requirements for storm water management have not changed significantly.

All sampling instructions from the Part I A 3 page have been moved here so they are all in one location.

Part II B Representative Discharge

Rewritten so that representative discharge outfalls are designated by the permittee and approved by the Department up front with the registration statement, instead of with each DMR. Any duplicative language about representative outfalls (e.g., old Part II D 3) was deleted.

Part II C Sampling waivers

Waivers for benchmark and visual monitoring due to adverse weather conditions or due to no 'measurable' storm event were moved from other sections and combined here. In the event of adverse weather conditions or no measurable storm event, a substitute sample must be collected in the next qualifying event and submitted to DEQ along with documentation explaining why.

Part II D Quarterly visual examinations

This is a requirement for a quarterly visual examination of the quality of the storm water (color odor, clarity, solids, foam, oils or other obvious pollution indicators.) Visual examination reports are maintained onsite with the SWPPP and contain the examination date, time, personnel, type of storm water, visual quality and visual quality of the receiving stream. This requirement that the visual quality of the receiving stream (including observations of solids deposition or oil sheen from the industrial activity) in the vicinity of the storm water outfall (including ditches and conveyances) was added in 2008. This requirement was added due to staff concerns of concrete product entering the stream at some operations and will be logged with the other visual information. These observations should be recorded in the receiving stream as well as any other conveyances to the stream that may allow migration of the product to the stream. It is believed that visual examination of these areas will provide a useful and inexpensive means for permittees to evaluate the effectiveness of their storm water pollution prevention plans (SWPP3s) and make any necessary modifications in housekeeping to address the results of the visual examinations.

Incorporated the term "measurable storm event" (an event that results in an actual discharge from the site) instead of a storm event greater than 0.1 inches.

Part II E Allowable nonstorm water discharges

In order to be an allowable nonstorm water discharge, the sources of nonstorm water must be identified in the SWPPP and, except for flows from fire fighting activities, the plan must identify and ensure the implementation of appropriate pollution prevention measures for such discharges.

Part II F Hazardous substances or oil release

Discharge of hazardous substances or oil from a facility must be eliminated or minimized in accordance with the SWPPP developed for this facility. Where a release containing a hazardous substance or oil in a reportable amount, the permittee must notify the Department as soon as possible. Where a release enters a MS4, the permittee must notify the owner of the MS4 as well. In addition, the SWPPP must be reviewed to identify measure to prevent the reoccurrence of such releases and to respond to such releases, and the plan must be modified as needed.

Part II G Storm water pollution prevention plans

The storm water pollution prevention plan is basically a set of best management practices used to eliminate or reduce pollutants in storm water from reaching surface waters. For a new discharger, the plan shall be prepared and implemented prior to commencing operations. For an existing discharger, the time frame for updates and implementation of the plan is by January 1, 2014. The SWPPP shall also be reviewed and amended when there is construction or a change in design, operation or maintenance which has a significant effect on the discharge of pollutants, when routine inspections, compliance evaluations or local, state or federal inspections determine deficiencies, if there is a spill, leak or other release, or if there is an unauthorized discharge from the facility. Modifications to the SWPPP are done within 30 days after discovery, observation or event that required a modification. New or modified BMPs shall be initiated before the next storm event if possible, but no later than 60 days after discovery. If there is a release of unauthorized discharge, the circumstances, actions taken and measure to prevent the recurrences should be included in the SWPPP and the Department notified per Part III G.

The plan contains the pollution prevention team, summary of potential pollutants sources, a site map (previously called the drainage map), a list of spills and leaks, a summary of sampling data for the previous three years,

description of BMPs where industrial materials or activities are exposed to storm water, good housekeeping measures, a preventive maintenance program, spill prevention and response procedures, instructions on routine facility inspections, employee training program implementation and schedule, identification of areas which have a potential for soil erosion, and description of storm water run-off management practices (permanent structural BMPs for the facility).

All BMPs must be maintained and observed during a storm water event, when feasible, to ensure they are functioning correctly. Where discharge locations are inaccessible, nearby downstream locations shall be observed. All observations are to be documented in the SWPPP. Procedures and schedules for maintenance of all BMPs are in the SWPPP. Any needed repairs shall be done before the next storm event or as soon as practicable. Back-up measures shall be employed until repairs can be completed. All maintenance and repair information goes in the SWPPP.

A comprehensive site compliance evaluation is conducted at least once a year by qualified personnel. It includes a list of industrial materials, residue or trash that may have or could come into contact with storm water, leaks or spills from industrial equipment, drums, barrels, tanks or other containers that have occurred within the past three years, off-site tracking of industrial or waste materials or sediment where vehicles enter or exit the site, evidence of, or the potential for, pollutants entering the drainage system, evidence of pollutants discharging to surface waters at all facility outfalls, and the condition of and around the outfall, including flow dissipation measures to prevent scouring, a review of training performed, inspections completed, maintenance performed, quarterly visual examinations, and effective operation of BMPs, documentation that all outfalls have been evaluated annually for the presence of unauthorized discharges, and results of both visual and any analytical monitoring done during the past year shall be taken into consideration during the evaluation. The SWPPP is modified within 30 days if changes are needed as a result of the comprehensive site compliance evaluation. If BMPs need modification, this shall be done no more than 60 days after the evaluation. A report must be written summarizing the evaluation. The evaluation may be used as one of the routine facility inspections.

Additional guidance on the development of the Storm Water Pollution Prevention Plan can be found in the EPA document titled Developing Your Stormwater Pollution Prevention Plan, A Guide For Industrial Operators, (EPA 833-B-09-002, February 2009). The guide can be found at the following link: http://www.epa.gov/npdes/pubs/industrial_swppp_guide.pdf.

Part III Conditions Applicable to All Permits

This section contains language from the permit regulation at 9VAC25-31-190 for conditions applicable to all permits. In 2013 a new condition was added in Part III A (Monitoring) to recognize the new Virginia Accredited Laboratory Program requirements.

In 2013, records retention in Part III B (Records) was changed to be 3 years from permit expiration or termination rather than from the date of sampling. This makes more sense for documents like SWPPPs and waivers.

Also in 2013, the duty to reapply in Part III M was changed to 90 days before expiration to match the registration statement requirements in 9VAC25-193-60.

Also in 2013, the transfer of permits Part III Y has eliminated the allowance for transfer of permit requirements through modifications or revocation and reissuances because general permits are not modified or revoked and reissued. General permits may only be automatically transferred; however, the 30 days in advance notice of the transfer of ownership was often not feasible. Language was added so that the board can change the deadline depending on the situation.

STATS Program Output

4/22/03 7:58:45 AM

Facility = Ready-Mixed Concrete Plant
Chemical = TRC
Chronic averaging period = 4
WLAa = 0.019
WLAc = 0.011
Q.L. = 0.1
samples/mo. = 1
samples/wk. = 1

Summary of Statistics:

observations = 1
Expected Value = .1
Variance = .0036
C.V. = 0.6
97th percentile daily values = .243341
97th percentile 4 day average = .166379
97th percentile 30 day average = .120605
< Q.L. = 0
Model used = BPJ Assumptions, type 2 data

A limit is needed based on Chronic Toxicity
Maximum Daily Limit = 1.60883226245856E-02
Average Weekly limit = 1.60883226245856E-02
Average Monthly LLimit = 1.60883226245856E-02

The data are:

0.1